

REMARKS

Claims 1-13 are now pending in the application. Claims 1-5 and 7-13 stand rejected under 35 U.S.C. § 102(e). Claim 6 stands rejected under 35 U.S.C. § 103(a). The above amendments and the following remarks are considered by Applicants to overcome each rejection raised by the Examiner and to place the application in condition for allowance. An early Notice of Allowance is therefore requested.

In view of the above amendments and the following remarks, Applicants request the withdrawal of the rejection of claims 1-13.

I. Rejection of Pending Claims 1-5 and 7-13 Under 35 U.S.C. § 102(e)

Claims 1-5 and 7-13 stand rejected as being anticipated by Sakamoto et al. (U.S. Patent No. 6,682,180). This rejection is traversed and believed overcome in view of the following discussion.

A. Relevant Law

"A claim is anticipated if each and every limitation is found either expressly or inherently in a single prior art reference." *Bristol-Myers Squibb v. Ben Venue*, 246 F.3d 1368, 1374 (Fed. Cir. 2001). Identity of invention requires that a prior reference disclose to one of ordinary skill in the art all elements and limitations of the patent claim. *Scripps Clinic v. Genentech*, 927 F.2d 1565, 1576 (Fed. Cir. 1991). Absence from the reference of any claimed element negates anticipation. *Kloster Speedsteel AB v. Crucible, Inc.*, 230 USPQ 81 (Fed. Cir. 1986).

B. Summary of Cited References

Sakamoto is directed to an ink jet head having a plurality of nozzles discharging ink supplied from an ink tank, which comprises a head main body and a joint. The head main body is provided with an ink common channel 110, along with a pressure chamber 112, a pressure unit 140, and ink supply channels 114 for each of the plural nozzles. Sakamoto also discloses a vibrating plate 104, stainless steel plates 105 and 150b, a polyimide film 126, an individual electrode 109, and a nozzle plate 106. A pressure unit 140 applies pressure to the pressure chamber 112 to discharge ink from the nozzle 120. The pressure unit 140 comprises the vibrating plate 104 and a piezoelectric element 108.

C. Argument

The Examiner asserts that Sakamoto teaches all the features recited in claims 1-5 and 7-13. Applicant respectfully disagrees with the Examiner's analysis.

Since claims 2-5 and 7-12 depend from independent claim 1, Applicant will address independent claims 1 and 13 first. Claims 1 and 13 recite an apparatus for ejecting, from a nozzle communicating with a pressure chamber in which a liquid is accommodated, a droplet of the liquid by deforming a portion of piezoelectric body and thereby changing a volume of the pressure chamber. More specifically, claims 1 and 13 recite in part an actuator unit fixed to the channel unit, the actuator unit having a plurality of active portions which are opposed to a pressure chamber of the channel unit. In other words, two or more active portions are opposed to a single pressure chamber. This feature is recited in claim 1 for example as "a plurality of active portions which are opposed to said pressure chamber *at respective different positions along said pressure chamber*".

Applicants respectfully submit that Sakamoto fails to teach or suggest an actuator unit having a plurality of active portions which are opposed to a single pressure chamber of the channel unit. The Examiner indicates that Figure 6 (element 109) of Sakamoto discloses this feature. Applicants respectfully disagree. Sakamoto describes that each of the pressure chambers 112 has an individual electrode 109 for driving a corresponding pressure unit 109. (See Column 7, Lines 16-18). Thus, Sakamoto does not teach or suggest multiple active portions for each pressure unit. As a result, Sakamoto does not solve the problem the present invention overcomes. Specifically, Sakamoto discloses only one active portion for each nozzle which requires a larger driver circuit causing a greater amount of heat. If the heat generated by the driver circuit is transmitted to the actuator unit, the operation of the active portion is adversely influenced so that the active portion does not eject ink in a desired manner. In the claimed invention, however, multiple active portions for each nozzle reduces the size of the driver circuit, thereby, reducing the amount of heat generated as discussed in the present specification. Thus, Sakamoto fails to teach or suggest an actuator unit having a plurality of active portions for one pressure chamber. Therefore, Applicants request the withdrawal of the rejection of claims 1 and 13 under 35 U.S.C. 102(e).

Claims 2-5 and 7-12 are dependent upon independent claim 1. Therefore, it is submitted that for at least the reasons mentioned above, claims 2-5 and 7-12 recite patentable subject matter. Accordingly, Applicants request the withdrawal of the rejection of claims 2-5 and 7-12 under 35 U.S.C. 102(e).

II. Rejection of pending claim 6 Under 35 U.S.C. 103(a) as being unpatentable over Sakamoto et al. in view of Sasaki et al.

Claims 6 stands rejected as being unpatentable over Sakamoto et al. (U.S. Patent No. 6,682,180) in view of Sasaki (U.S. Patent No. 6,719,409 B2). This rejection is traversed and believed overcome in view of the following discussion.

A. Relevant Law

An Examiner may find each claimed element of an invention in the prior art references but it is not sufficient to establish obviousness of the invention. *In re Rouffet*, 47 USPQ2d 1453 (Fed. Cir. 1998). A determination of obviousness must involve more than an indiscriminate combination of the prior art; there must be some motivation, suggestion, or teaching of the desirability of combining or modifying the references to arrive at the claimed method. *In re Dance*, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998). Further, rejecting claims solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed inventions itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention is “an inappropriate process by which to determine patentability.” *Sensonics, Inc. v. Aerosonic Corp.*, 38 USPQ2d 1551 (Fed. Cir. 1996).

B. Summary of Cited References

Sasaki is directed to an ink jet printer head and a piezoelectric actuator. Sasaki discloses an ink jet printer head having a piezoelectric actuator with an upper electrode, a piezoelectric plate, a lower electrode, a vibration transferring plate and a pressure chamber. Sasaki further discloses that the area of the piezoelectric plate is .5 or more and 1.0 or less of the area of the opening part of the pressure chamber.

C. Argument

The Examiner indicates that combination of the cited references teach or suggest the claimed invention. Moreover, the Examiner takes the position that Sasaki cures the deficiencies of Sakamoto. Specifically, the Examiner states that Sakamoto is silent in regard to the outer end portion of at least one of the two active portions being located at a position inwardly distant from at least one of lengthwise opposite ends of the elongate pressure

chamber by not more than 50% of the predetermined distance. The Examiner further states that Sasaki discloses the area of the piezoelectric plate is 0.5 or more and 1.0 or less of the area of the opening part of the pressure chamber. Applicant traverses the rejection of claim 6 under 35 U.S.C. 103(a).

Claim 6 is dependent upon claim 1. It is respectfully submitted that the combination of the cited references fail to teach or suggest the features recited in independent claim 1. Specifically, the cited references fail to teach or suggest an actuator unit having a plurality of active portions for one pressure chamber. Therefore, Applicant respectfully requests the withdrawal of the rejection of claim 6 under 35 U.S.C. 103(a).

III. Discussion of U.S. Patent No. 5,266,964 (“’964 patent”)

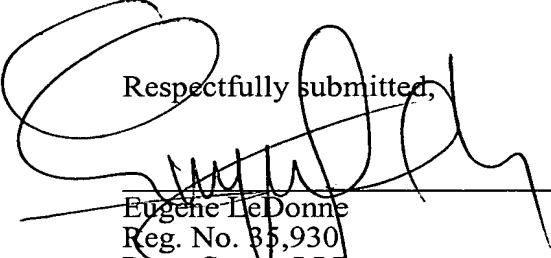
Along with this Amendment, Applicant has concurrently submitted the ‘964 patent in an Information Disclosure Statement. Applicant submits that claims 1 and 13 are also patentable over the ‘964 patent.

Claim 1 recites that the first and second electrodes (e.g., positive and negative electrodes 24a and 25 in FIG. 7) for each active portion are arranged in a thickness direction of a piezoelectric sheet, which direction is also parallel to the direction in which the two active portions oppose the pressure chamber (e.g., 16 in FIG. 7). In the ‘964 patent, by contrast, the electrodes (e.g., positive and negative electrodes 54a, 52a in FIG. 2) for each active portion are arranged *perpendicular* to the thickness direction of the piezoelectric sheet 38. Claim 13 also recites similar features. Thus, Applicant submits that claims 1 and 13 (also dependent claims 2-12 by virtue of their dependency from claim 1) are patentable over the ‘964 patent.

III. Conclusion

In view of the above amendments and remarks, Applicants submit claims 1-13 recite subject matter that is neither taught nor suggested by the applied references. Claims 1 and 13 are amended. No new matter is presented. Thus, for the reasons presented above, claims 1-13 are believed by Applicant to define patentable subject matter and should be passed to issue at the earliest possible time. A Notice of Allowance is requested.

Respectfully submitted,



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